Claims

1. An optical sheet for a display apparatus comprising:

a first medium having a light guide pathway disposed between a first region and a second region so as to transmit a light from the first region to the second region, the first medium having a first reflective index; and

a second medium being filled in the light guide pathway so as to reflect the light while the light passes through the light guide pathway and to guide the light to the second region, the second medium having a second reflective index.

2. The optical sheet of claim 1, wherein the first medium comprises a plurality of light guide pathways, and centers of the light guide pathways adjacent to each other are arranged in a triangular shape or a rectangular shape when viewed on a plane that is substantially perpendicular to axes of the light guide pathways.

3. The optical sheet of claim 1, wherein the first reflective index is greater than the second reflective index.

4. The optical sheet of claim 3, wherein the second reflective index is about 1.

5. The optical sheet of claim 1, wherein the light guide pathway has a first length and the first length is longer than $W/\tan\theta$ that represents a length needed to reflect the light incident into the light guide pathway more than once, in which W denotes a width of the light guide pathway and θ denotes an angle between the light incident into the light guide pathway and an axis of the light guide pathway.

6. The optical sheet of claim 1, wherein the first region is a light-generating region, and the second region is a light-processing region.

7. The optical sheet of claim 1, wherein the first region is a light-processing region, and the second region is a display region on which an image processed in the light-processing region is displayed.

8. The optical sheet of claim 1, wherein the first medium comprises a plurality of fiber optic pipes each having a core that acts as the light guide pathway and a cladding that surrounds the core, the cladding contacting an adjacent cladding.

9. The optical sheet of claim 8, wherein the fiber optic pipe comprises a material selected from the group consisting of polymethlymethacrylate (PMMA), polycarbonate and quartz.

10. The optical sheet of claim 8, wherein the fiber optic pipes are bonded with each other by means of a bonding material.

11. The optical sheet of claim 1, wherein the first medium comprises an optical plate having a plurality of light guide pathways.

12. The optical sheet of claim 11, wherein the light guide pathway has a cylindrical shape, a triangular prism shape, a rectangular prism shape or a polygonal prism shape.

13. A method of manufacturing an optical sheet for a display apparatus comprising:

bundling a plurality of fiber optic pipes by contacting outer surfaces of the fiber optic pipes with each other, each of the fiber optic pipes having a first length, a first end and a second end opposite to the first end; and

cutting the bundled fiber optic pipes such that the bundled fiber optic pipes have a second length shorter than the first length.

14. The method of claim 13, wherein the bundling the fiber optic pipes further comprises coating a bonding material over the contacted outer surface of the fiber optic pipes.

15. The method of claim 13, wherein the bundling the fiber optic pipes further comprises disposing the fiber optic pipes such that axes of the fiber optic pipes are arranged in a triangular shape when viewed on a plane that is substantially perpendicular to the axes.

16. The method of claim 13, wherein the bundling the fiber optic pipes further comprises disposing the fiber optic pipes such that axes of the fiber optic pipes are arranged in a rectangular shape when viewed on a plane that is substantially perpendicular to the axes.

17. The method of claim 13, wherein the second length is longer than $W/\tan\theta$ that represents a length needed to reflect the light incident into the light guide pathway more than once, in which W denotes a width of the light guide pathway and θ denotes an angle between the light incident into the light guide pathway and an axis of the light guide pathway.

18. The method of claim 13, further comprising grinding the first end and

a third end that is formed by cutting the bundled fiber optic pipes.

19. A display apparatus comprising:

a backlight unit that generates a light in a first region;

a display unit disposed in a second region formed in a light guide pathway through which the light passes so as to display data using the light; and

an optical sheet disposed on the light guide pathway, the optical sheet including a first medium and a second medium, the first medium being disposed on the light guide pathway and having a first reflective index, the second medium being filled in the light guide pathway so as to emit the light incident into the light guide pathway without diffusion and having a second reflective index.

20. The display apparatus of claim 19, wherein the first medium comprises a plurality of fiber optic pipes each having a core that acts the light guide pathway and a cladding that surrounds the core, the cladding contacting an adjacent cladding.

21. The display apparatus of claim 19, wherein the first medium comprises an optical plate on which a plurality of light guide pathways is formed.

22. The display apparatus of claim 19, wherein the light guide pathway has a cylindrical shape, a triangular prism shape, a rectangular prism shape or a polygonal prism shape.

23. The display apparatus of claim 19, wherein the display unit comprises:

a TFT substrate having a plurality of thin film transistors and a plurality of pixel electrodes, the thin film transistors being arranged on a first substrate, the pixel

electrodes receiving a driving power from the thin film transistors;

a color filter substrate having a color filter and a common electrode, the color filter being disposed on a second substrate and facing the pixel electrodes, the common electrode formed over the second substrate; and

a liquid crystal disposed between the TFT substrate and the color filter substrate,

and wherein the light guide pathway is formed corresponding to each of the pixel electrodes.

24. The display apparatus of claim 19, wherein the optical sheet is disposed between the first region and the second region.

25. The display apparatus of claim 19, wherein the optical sheet is formed in a third region disposed between the first region and the second region.